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09/642,765	08/22/2000	Toshihiko Taguchi	1023/HIROSE	8065

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EXAMINER

COOKE, COLLEEN P

ART UNIT	PAPER NUMBER
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1725

8

DATE MAILED: 03/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-8

# Office Action Summary

Application No.

09/642,765

Applicant(s)

TAUGUCHI ET AL.

Examiner

Colleen P Cooke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: \_\_\_\_\_

***Information Disclosure Statement***

The information disclosure statement filed on 1/25/02 does not fully comply with the requirements of 37 CFR 1.98 because: no copies of the references are present in the file. Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the above mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

***Response to Arguments***

Applicant's arguments filed 2/4/02 have been fully considered but they are not persuasive.

With regards to the rejection of claims under 35 U.S.C. 112, second paragraph, as being indefinite, claim 3 and its dependents are still considered indefinite because two ranges are given for the components of one of the plurality of metal powders. The ranges are not numerical, however, claim 3 and thus its dependents, require one Sn alloy powder and one additional powder selected from Sn alloy, elemental Ag, elemental Cu, and elemental Sn powders. The claim later requires two Sn alloy powders. As a result, the claim does not clearly set forth the metes and bounds of the patent protection desired.

With regards to the rejection of claims 1 and 2 under 35 U.S.C. 102(b) over Paruchuri et al. (5928404), the applicant's amendment to "less than 3 mass % Cu" fail to overcome this

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rejection. The claim in the instant application relies upon *mass* % of Cu while the reference teachings a composition having a certain *weight* % of Cu. These percentages are not the same. Thus, the teaching by Paruchuri et al. that the solder composition may be 96.5 weight % Sn, 3.5 weight % Ag, and as little as 3.0 weight % Cu would correspond to approximately 95.3 mass % Sn, 3.11 mass % Ag, and as little as 1.5 mass % Cu. This composition still reads on the claim as amended.

Applicant argues with respect to claims 7, 8, and 12 that Paruchuri et al. does not disclose a solder paste containing more than one Sn alloy powder. Applicant presents similar argument with respect to claims 1, 3, and 8-10 in that Anderson et al. does not teach a paste including a plurality of different types of metal powder. This argument is not persuasive because the applicant is arguing the process of making the product claimed.

Applicant argues that the claims do not in fact refer to a product by process. This argument is not persuasive. Whether the claim contains adjectives or any other parts of speech is not the crux of a product by process claim. Part of speech is irrelevant. What is relevant is that the claim is drawn to a solder paste having flux and certain metals, which result in a certain solder composition. The mixing of certain types of metal powders to achieve this metal composition of the solder paste is indeed a process of making the claimed solder paste, regardless of the parts of speech used to describe the mixing of these metal powders to form this paste.

In addition, applicant has presented no argument or evidence to establish that a solder paste formed by mixing certain alloy (or elemental) powders is patentably distinct from a solder paste of the same composition formed by a single alloy powder or an alloy powder mixed with

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one elemental powder. When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324. Applicant has failed to show how a paste of two mixed, Sn alloy powders is patentably distinct from the paste of either Paruchuri et al. or Anderson et al., which both have the same composition as that which is claimed.

Applicant further argues with respect to new claim 18 that Paruchuri et al. does not teach melting a plurality of different types of powder during soldering and refers to Column 6, line 39 of the reference. This argument is also not persuasive because the passage relied upon from Column 6 refers to a specific example of a composite solder which is not the same as that relied upon in the rejection. This passage refers to a Sn-Pb-Ag alloy mixed with bismuth. Although this type of solder is taught by the reference, these teachings are not relied upon in the rejection. The rejection made concerns those teachings of Paruchuri et al. relating to Sn-Ag-Cu alloys and thus the teaching that bismuth particles remain unmelted and provide a reinforcing effect is not relevant to the rejection made. Thus if the powder claimed melts during soldering as claimed, the powder of Paruchuri et al. would also because they appear to be the same powder and would thus have the same properties.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 5-12, and 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance the ranges are not numerical, however, claim 3 and thus its dependents, require one Sn alloy powder and one additional powder selected from Sn alloy, elemental Ag, elemental Cu, and elemental Sn powders. The claim later requires two Sn alloy powders. As a result, the claim does not clearly set forth the metes and bounds of the patent protection desired.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Paruchuri et al. (5928404).

With respect to claims 1 and 2 Paruchuri et al. teaches a solder paste (in weight percent) made by mixing two powders, a tin-silver alloy (96.5% Sn - 3.5% Ag) and 3-10% copper (Columns 3-4, lines 59-4).

With respect to claims 17 and 18, Paruchuri et al. teaches that the solder paste may be printed onto a printed circuit board. A surface mount device is then placed on the solder paste and reflowed to form a solder joint (Column 5, lines 48-56).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paruchuri et al. (5928404). Paruchuri et al. teaches the solder paste and soldering method of claims 1 and 18 respectively.

With respect to claims 3-7 and 14, Paruchuri et al. does not teach that the solder paste is made by mixing together two Sn alloy powders. However, Paruchuri et al. does teach the solder composition of claim 3. It appears that the instantly claimed product by process is the same as

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that which is claimed (a solder alloy having 1-5% Ag, 0.5-3% Cu, and a remainder of Sn). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324. In the instant case, the claim is drawn to a solder paste but also claims making the solder paste by mixing different powders to achieve a desired final composition. The prior art teaches this desired final alloy composition, which is the same regardless of what alloy powders are combined to achieve this composition.

With respect to claims 8 and 16, Paruchuri et al. teaches that the solder paste may be used to solder a surface mounted device by reflow soldering (Column 5, lines 48-56).

With respect to claims 9 and 10, although Paruchuri et al. does not teach the reflow soldering temperature of the particular solder composition, the reflow soldering temperature is dependent upon the materials. As the solder composition is the same as that which is claimed, the reflow temperature would necessarily be the same.

With respect to claims 11 and 12, Paruchuri et al. teaches that a surface mount device is placed on solder paste printed on a circuit board (Column 5, lines 48-51) and reflowed to form a solder joint (Column 5, lines 48-56), but does not specifically refer to a chip component. It would be obvious to mount a chip component because Paruchuri et al. teaches mounting any surface mount device, which would include a chip component.

With respect to claims 13 and 15, Paruchuri et al. teaches at least 1.5% Cu. However, it would have been obvious to modify the Cu content by reducing it to lower the melting point of the solder.



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Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (5527628).

With respect to claims 1-7 and 13-15 Anderson et al. teaches a solder composition in weight percent of 93.6% Sn, 4.7% Ag, and 1.7% Cu (Column 2, lines 44-45), which can be a solder paste (Column 6, lines 16-18 and 34-37). Anderson et al. does not teach that the solder paste is made by mixing together two powders. However, Anderson et al. does teach the solder composition of both claims 1 and 3. It appears that the instantly claimed product by process is the same as that which is claimed (a solder alloy having 1-5% Ag, 0.5-3% Cu, and a remainder of Sn). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324. In the instant case, the claim is drawn to a solder paste but also claims making the solder paste by mixing different powders to achieve a desired final composition. The prior art teaches this desired final alloy composition, which is the same regardless of what alloy powders are combined to achieve this composition.

With respect to claims 8-10 and 16-18, Anderson et al. teaches that the solder may be used in reflow soldering, where the melting range is no more than 15° greater than the eutectic melting temperature, which is 217°C for this particular solder, yielding a melting range no more than 232°C (Column 2, lines 44-45 and Column 5, lines 3-12) and also that the solder paste be used with surface mount technology (Column 6, lines 34-37).

With respect to claim 11, Anderson et al. teaches that a surface mount device and solder paste are reflowed to form a solder joint (Column 5, lines 3-12 and Column 6, lines 16-18, 34-

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37), but does not specifically refer to a chip component. It would be obvious to mount a chip component because Anderson et al. teaches mounting any surface mount device, which would include a chip component.

Likewise with respect to claim 12, Anderson et al. teaches using the solder paste in reflow surface mounting but does not specifically teach printing the solder paste. However, it would be obvious to print the solder paste because that is one of the most accurate, easily controllable, and widely available methods to apply solder paste to a substrate.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this or earlier communications from the examiner should be directed to Colleen Cooke, whose telephone number is 703-305-1136. She can normally be reached Monday-Thursday from 7:15-5:45pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Thomas Dunn, can be reached at 703-308-3318. The official fax number for the organization where this application or proceeding is assigned is 703-305-6078. The unofficial fax number for this examiner is 703-746-3048.

Any inquiry of a general nature relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0661.

CPC 3/19/2002



TOM DUNN  
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